

REMARKS

The Office Action dated October 30, 2008, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

STATUS OF THE CLAIMS

Claims 37-60, 63-65, and 68-75 are currently pending in the present application, of which claims 37, 65, and 71 are independent claims. Claims 37-60, 63-65, and 68-71 have been amended, and claims 72-75 have been added, to more particularly point out and distinctly claim the subject matter of the present invention. No new matter has been added. Claims 61-62 and 66-67 have been cancelled without prejudice or disclaimer. Claims 37-60, 63-65, and 68-75 are respectfully submitted for consideration.

CLAIM REJECTIONS UNDER 35 U.S.C. 103

Claims 37-45, 48, and 52-71 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,369,800 of Nading et al. ("Nading") in view of Official Notice as to what was allegedly "known in the art." The Office Action acknowledged that Nading fails to disclose or suggest all of the features of any of the presently pending claims, and cited Official Notice to remedy the deficiencies of Nading with respect to the rejected claims. Applicant respectfully traverses this rejection.

Independent claim 37, upon which claims 38-60, 63-64, and 68-70 depend, is directed to an apparatus including a light guide having a surface for internally reflecting a generated light signal from a transmitter to a receiver. The apparatus also includes an actuator having an actuator surface. The actuator surface has at least a portion which is movable between a first position spaced apart from a portion of the light guide surface, with a gas or fluid therebetween, and a second position which is in contact with the portion of the light guide surface. The portion of the light guide surface has a higher refractive index than the portion of the actuator surface. The portion of the actuator surface has a different refractive index than the gas or fluid. In use the relative refractive index is changed at a contacted portion of the light guide surface, thereby altering the light signal received by the receiver.

Independent claim 65, upon which claims 72-75 depend, is directed to a method including reflecting a generated light signal off a surface. A relative refractive index between materials on either side of the surface is changed, thereby altering the reflected light signal. The reflected light signal is received and used to control a position of an element.

Independent claim 71 is directed to an apparatus including light guiding means for guiding light. The light guiding means has a surface for internally reflecting a generated light signal from transmitting means to receiving means. The apparatus also includes actuating means for actuating. The actuator means has a surface with at least a portion of which is movable between a first position spaced apart from a portion of a light guide

surface, with a gas or fluid therebetween, and a second position in contact with the portion of the light guide surface. The portion of the light guide surface has a higher refractive index than the portion of the actuator surface. The portion of the actuator surface has a different refractive index than the gas or fluid. In use the relative refractive index is changed at the contacted portion of the light guide surface, thereby altering the light signal received by the receiving means.

Applicant respectfully submits that the combination of Nading and Official Notice fails to disclose or suggest all of the features of any of the presently pending claims.

Nading generally relates to a method and apparatus for use with a keypad for an electronic device including at least one plunger associated with a key. The plunger is moveable between a first position and a second position relative to the electronic device. The apparatus is an electrical assembly including a light guide, and at least one electrical component carried by the light guide and positioned to underlie the key. Positioning to underlie the key is for at least one of a) illuminating the key, and b) changing between a first electrical state and a second electrical state in response to the plunger being moved between the first and second positions to indicate that the key has been operated by the user (*see* Nading at Abstract).

Applicant respectfully submits that the combination of Nading and Official Notice does not disclose or suggest “a **light guide** having a surface for internally reflecting a generated light signal from a transmitter to a receiver,” as recited in independent claim 37 and similarly recited in independent claims 65 and 71 (emphasis added).

The Office Action took the position that these features are disclosed by Nading at Figure 2 and col. 3, line 51 to col. 4, line 14. In the cited portion, Nading refers to a light guide 20a including a key site 28a into which a plunger 16a can be disposed. A light source 30a and an optical detector 32a are disposed adjacent to the key site 28a (*see* Nading at Figure 2 and col. 3, lines 52-54). The light guide 20a directs light from the light source 30a to the key site 28a (*see* Nading at Figure 2 and col. 3, line 66 to col. 4, line 1). The **plunger** 16a is coated with a light reflective material such that when it is disposed in the key site 28a, light from the light source 30a is reflected back to the optical detector 32a (*see* Nading at Figure 2 and col. 3, lines 62-65).

However, Nading fails to disclose or suggest that the **light guide** has a surface for internally reflecting a generated light signal from a transmitter to a receiver. As discussed above, Nading refers to the light guide functioning to guide light towards the key site, not functioning to reflect light back to the optical detector. Light from the light source will impinge on the surface of the key site at too steep an angle to reflect the light back to the optical detector by internal reflection in accordance with Snell's law.

In addition, the plunger of Nading cannot correspond to the light guide of the claimed invention. As discussed above, Nading requires that the plunger is coated with a reflective coating. In contrast, the light guide of the claimed invention does not require a reflective coating to internally reflect light if the light passing through the light guide hits the sides thereof at an angle shallow enough to internally reflect due to a difference in refractive index between the wall and the exterior surface of the light guide (*see*

Specification at Figure 2 and page 6, lines 1-9). Thus, the light guide of the claimed invention can be, for example, transparent glass fiber.

Official Notice does not cure these deficiencies of Nading. The Office Action did not take Official Notice that it was well known in the art at the time the invention was made to have a light guide having a surface for internally reflecting a generated light signal from a transmitter to a receiver. Instead, with respect to independent claim 65, the Office Action took Official Notice that it was well known in the art at the time the invention was made to have buttons on a cell phone that control the position of a cursor on a display of the cell phone (*see* Office Action at page 11). With respect to independent claims 37 and 71, the Office Action appears to have taken Official Notice that at the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make a light guide more reflective than a coating on a plunger (*see* Office Action at page 3).

In addition, Applicant respectfully submits that the application of Official Notice with respect to independent claims 37, 65, and 71 is improper. With respect to Official Notice, the MPEP states that “such rejections should be judiciously applied” (*see* MPEP § 2144.03). “Official notice without documentary evidence to support an [E]xaminer’s conclusion is permissible only in some circumstances” (*see* MPEP § 2144.03(A)). “It would not be appropriate for the [E]xaminer to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of **instant and unquestionable** demonstration as being well-known” (*see Id.*, emphasis added).

Here, the Office Action stated on page 3 that “it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the light guide more reflective than the coating on the plunger because Applicant has not disclosed that wherein the portion of the light guide surface has a higher refractive index than the portion of the actuator surface provides an advantage, is used for a particular purpose or solves a stated problem.” However, Applicant discloses that the portion of the light guide surface has a higher refractive index than the portion of the actuator surface for a particular purpose, specifically, to reflect light within the light guide at a critical angle under Snell’s law (*see* Specification at page 6, lines 1-9).

The Office Action also stated on page 3, “One of ordinary skill in the art, furthermore, would have expected Applicant’s invention to perform equally well regardless of the relative reflectivity of the coating on the plunger and the light guide because the system will still detect the presence of plunger even if the plunger is not as reflective as the light guide.” Further, the Office Action stated on page 11 that “it was well known in the art at the time the invention was made to have buttons (keypads) on a cell phone that control the position of a cursor on the display of the cell phone.” However, no evidence for these conclusory statements is present in the record. Further, per the above, the facts asserted as well-known must be capable of instant and unquestionable demonstration as being well-known, and Applicant respectfully submits that such is not the case here. If the Examiner continues to believe that a portion of a light guide surface having a higher refractive index than a portion of an actuator surface,

and/or controlling a position of an element, would have been obvious, Applicant respectfully requests that the Examiner provide a reference in the next Office Action offering evidence that this is the case. The legal standard for applying Official Notice under MPEP § 2144.03 is rigorous, and the present application of Official Notice falls short of meeting this high standard.

Therefore, the combination of Nading and Official Notice does not disclose or suggest “a light guide having a surface for internally reflecting a generated light signal from a transmitter to a receiver,” as recited in independent claim 37 and similarly recited in independent claims 65 and 71.

Furthermore, the combination of Nading and Official Notice fails to disclose or suggest “said actuator surface having at least a portion which is movable between a first position ... and a second position which is **in contact with** the portion of the light guide surface,” as recited in independent claim 37 and similarly recited in independent claim 71 (emphasis added).

The Office Action took the position that these features are disclosed by Nading at Figure 2 and col. 3, lines 54-61. However, Nading refers to the plunger 16a being moved to only a second position as shown in phantom in Figure 2 (*see also* Nading at col. 3, lines 56-57). The phantom lines are clearly **spaced apart from** the surface of the light guide 20a, and there does not appear to be any reference that the plunger 16a contacts the light guide 20a (*see* Nading at Figure 2 and col. 3, lines 54-61).

Accordingly, Nading does not disclose or suggest that the plunger has at least a portion which is movable between the first position and a second position which is **in contact with** the portion of the light guide surface. No contact is required in Nading because, as discussed above, light is directed to the optical detector by way of reflection off the reflective surface of the plunger. In contrast, the claimed invention requires that an actuator contact the surface of the light guide to alter the relative refractive index to change the internal reflection properties of the light guide in accordance with Snell's law (*see* Specification at page 6, lines 1-21).

In addition, as discussed above, Nading requires that the plunger is coated with the reflective coating, which teaches away from these features of the claimed invention. Such reflective coatings can degrade over time and/or damage the surface of a light guide if they were to come into contact with the surface of the light guide. In contrast, no such reflective coating is required by the claimed invention, which utilizes the internal reflective properties of the light guide to reflect light from a transmitter to a receiver (*see* Specification at Figure 2 and page 6, lines 1-2). Thus, the actuator can be made of a flexible rubber material, for example (*see* Specification at page 7, lines 14-15).

Official Notice does not cure these deficiencies of Nading. The Office Action did not take Official Notice that it was well known in the art at the time the invention was made to have an actuator surface having at least a portion which is movable between a first position and a second position which is in contact with the portion of a light guide surface. Instead, with respect to independent claim 65, the Office Action took Official

Notice that it was well known in the art at the time the invention was made to have buttons on a cell phone that control the position of a cursor on a display of the cell phone, as discussed above (*see* Office Action at page 11). With respect to independent claims 37 and 71, as discussed above, the Office Action appears to have taken Official Notice that at the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make a light guide more reflective than a coating on a plunger (*see* Office Action at page 3). In addition, as discussed above, Applicant respectfully submits that the application of Official Notice with respect to independent claims 37, 65, and 71 is improper.

Therefore, the combination of Nading and Official Notice fails to disclose or suggest “said actuator surface having at least a portion which is movable between a first position ... and a second position which is in contact with the portion of the light guide surface,” as recited in independent claim 37 and similarly recited in independent claim 71.

For at least the reasons discussed above, Applicant respectfully submits that the combination of Nading and Official Notice does not disclose or suggest all of the elements of independent claims 37, 65, and 71. Accordingly, Applicant respectfully requests that the rejection of claims 37, 65, and 71 be withdrawn.

Claims 38-45, 48, 52-60, 63-64, and 68-70 depend from, and further limit, independent claim 37. Thus, each of claims 38-45, 48, 52-60, 63-64, and 68-70 recite subject matter that is neither disclosed nor suggested in the combination Nading and

Official Notice. It is, therefore, respectfully requested that the rejections of claims 38-45, 48, 52-60, 63-64, and 68-70 be withdrawn.

Claim 47 was rejected under 35 U.S.C. 103(a) as being unpatentable over Nading in view of Official Notice as to what was allegedly “known in the art” and further in view of U.S. Patent No. 6,196,691 of Ochiai (“Ochiai”). The Office Action took the position that the combination of Nading and Official Notice discloses all of the elements of the claims, with the exception of the features recited in claim 47. The Office Action then relies upon Ochiai as allegedly curing these deficiencies in the combination of Nading and Official Notice. It is respectfully asserted that the combination of Nading, Official Notice, and Ochiai fails to disclose or suggest the recitations of the pending claims. Reconsideration is requested.

In order for this rejection to be sustainable, the combination of Nading, Official Notice, and Ochiai must teach all the recitations of independent claim 37. Accordingly, the arguments presented above supporting the patentability of independent claim 37 over the combination of Nading and Official Notice are incorporated herein to support the patentability of dependent claim 47. Therefore, it is respectfully requested that dependent claim 47 be allowed. Ochiai fails to cure the deficiencies of the combination of Nading and Official Notice.

Ochiai generally relates to rays of light from three light-emitting diodes incident at a thicker side end edge of a light guide plate made of a transparent plate. A ratio of grating part width/non-grating part width in a unit width of a diffraction grating provided

on a rear surface of the light guide plate is varied. Grating constant of a diffraction grating of a front surface provided perpendicularly to the diffraction grating, is set to a fixed value smaller than a mean grating constant of the diffraction grating of the rear surface. Thus, uniform, high brightness at the front surface of the light guide plate can be obtained (*see* Ochiai at Abstract).

However, Ochiai fails to cure the deficiencies of the combination of Nading and Official Notice. Similarly to the combination of Nading and Official Notice, Ochiai fails to disclose or suggest, at least, “a light guide having a surface for internally reflecting a generated light signal from a transmitter to a receiver,” as recited in independent claim 37. Ochiai is silent as to teaching the particular features associated with the light guide of independent claim 37.

Therefore, the combination of Nading, Official Notice, and Ochiai would not lead a person of ordinary skill in the art to arrive at the features of the light guide as recited in independent claim 37. Consequently, Applicant submits that independent claim 37 and related dependent claim 47 are not obvious over the combination of Nading, Official Notice, and Ochiai.

In view of the foregoing, it is respectfully requested that claim 47 be allowed.

Claims 49-51 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nading in view of Official Notice as to what was allegedly “known in the art” and further in view of U.S. Patent Appln. Pub. No. 2002/0061735 of Wingett et al. (“Wingett”). The Office Action took the position that the combination of Nading and Official Notice

discloses all of the elements of the claims, with the exception of the features recited in claims 49-51. The Office Action then relies upon Wingett as allegedly curing these deficiencies in the combination of Nading and Official Notice. It is respectfully asserted that the combination of Nading, Official Notice, and Wingett fails to disclose or suggest the recitations of the pending claims. Reconsideration is requested.

In order for this rejection to be sustainable, the combination of Nading, Official Notice, and Wingett must teach all the recitations of independent claim 37. Accordingly, the arguments presented above supporting the patentability of independent claim 37 over the combination of Nading and Official Notice are incorporated herein to support the patentability of dependent claims 49-51. Therefore, it is respectfully requested that dependent claims 49-51 be allowed. Wingett fails to cure the deficiencies of the combination of Nading and Official Notice.

Wingett generally relates to a control device for electronic apparatus, such as a mobile telephone handset, including a keymat having a navigation key with a magnet mounted so as to move with the key. A user may change the attitude of the key by tilting or deforming the key, and at least one magnetic field sensor detects the attitude of the key. This may be used to control a pointer displayed on a screen (*see* Wingett at Abstract).

However, Wingett fails to cure the deficiencies of the combination of Nading and Official Notice. Similarly to the combination of Nading and Official Notice, Wingett fails to disclose or suggest, at least, “a light guide having a surface for internally

reflecting a generated light signal from a transmitter to a receiver,” as recited in independent claim 37. Wingett is silent as to teaching the particular features associated with the light guide of independent claim 37.

Therefore, the combination of Nading, Official Notice, and Wingett would not lead a person of ordinary skill in the art to arrive at the features of the light guide as recited in independent claim 37. Consequently, Applicant submits that independent claim 37 and related dependent claims 49-51 are not obvious over the combination of Nading, Official Notice, and Wingett.

In view of the foregoing, it is respectfully requested that claims 49-51 be allowed.

Claims 37 and 46 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,844,871 of Hinckley et al. (“Hinckley”) in view of Official Notice as to what was allegedly “known in the art.” Applicant respectfully traverses this rejection.

Hinckley generally relates to a mouse that uses a camera as its input sensor. A real-time vision algorithm determines the six degree-of-freedom mouse posture, consisting of 2D motion, tilt in the forward/back and left/right axes, rotation of the mouse about its vertical axis, and some limited height sensing. Thus, a familiar 2D device can be extended for three-dimensional manipulation, while remaining suitable for standard 2D Graphical User Interface tasks (*see* Hinckley at Abstract).

Applicant respectfully submits that the combination of Hinckley and Official Notice fails to disclose or suggest all of the features of any of the presently pending claims. Specifically, Applicant respectfully submits that the combination of Hinckley

and Official Notice does not disclose or suggest “a **light guide** having a surface for **internally** reflecting a generated light signal from a transmitter to a receiver ... wherein in use the **relative refractive index is changed** at a contacted portion of the light guide surface, thereby altering the light signal received,” as recited in independent claim 37 (emphasis added).

The Office Action took the position that these features are disclosed by Hinckley at Figure 9 and col. 7, lines 46-50. In the cited portion, Hinckley refers to light from LEDs 282, 284, 286, 288, 290, and 292 being reflected off a working surface and into a camera 294. However, Hinckley fails to disclose or suggest a **light guide** having a surface for **internally** reflecting a generated light signal from a transmitter to a receiver, and that in use, the **relative refractive index is changed** at a contacted portion of the light guide surface, altering the light signal received. In particular, Hinckley does not mention a light guide nor the relative refractive index of the working surface.

Official Notice does not cure these deficiencies of Hinckley. The Office Action did not take Official Notice that it was well known in the art at the time the invention was made to have a light guide having a surface for internally reflecting a generated light signal from a transmitter to a receiver, and that in use, the relative refractive index is changed at a contacted portion of the light guide surface, altering the light signal received. Instead, the Office Action appears to have taken Official Notice that at the time the invention was made, it would have been an obvious matter of design choice to a

person of ordinary skill in the art to make a light guide more reflective than a bottom of a mouse (*see* Office Action at page 15).

In addition, Applicant respectfully submits that the application of Official Notice with respect to independent claim 37 is improper. The Office Action stated on page 15 that “it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the light guide more reflective than the bottom of the mouse because Applicant has not disclosed that wherein the portion of the light guide surface has a higher refractive index than the portion of the actuator surface provides an advantage, is used for a particular purpose or solves a stated problem.” However, as discussed above, Applicant discloses that the portion of the light guide surface has a higher refractive index than the portion of the actuator surface for a particular purpose, specifically, to reflect light within the light guide at a critical angle under Snell’s law (*see* Specification at page 6, lines 1-9).

The Office Action also stated on page 15, “One of ordinary skill in the art, furthermore, would have expected Applicant’s invention to perform equally well regardless of the relative reflectivity of the bottom of the mouse and the light guide because the system will still detect the tilting of the mouse even if the bottom of the mouse is not as reflective as the light guide.” However, no evidence for this conclusory statement is present in the record. Further, per the above, the facts asserted as well-known must be capable of instant and unquestionable demonstration as being well-known, and Applicant respectfully submits that such is not the case here. If the Examiner

continues to believe that a portion of a light guide surface having a higher refractive index than a portion of an actuator surface would have been obvious, Applicant respectfully requests that the Examiner provide a reference in the next Office Action offering evidence that this is the case. The legal standard for applying Official Notice under MPEP § 2144.03 is rigorous, and the present application of Official Notice falls short of meeting this high standard.

Thus, the combination of Hinckley and Official Notice does not disclose or suggest “a light guide having a surface for internally reflecting a generated light signal from a transmitter to a receiver ... wherein in use the relative refractive index is changed at a contacted portion of the light guide surface, thereby altering the light signal received,” as recited in independent claim 37.

For at least the reasons discussed above, Applicant respectfully submits that the combination of Hinckley and Official Notice fails to disclose or suggest all of the elements of independent claim 37. Accordingly, Applicant respectfully requests that the rejection of claim 37 be withdrawn.

Claims 46 depends from, and further limits, independent claim 37. Thus, claim 46 recites subject matter that is neither disclosed nor suggested in the combination Hinckley and Official Notice. It is, therefore, respectfully requested that the rejections of claim 46 be withdrawn.

CONCLUSION

For the reasons explained above, it is respectfully submitted that each of claims 37-60, 63-65, and 68-75 recite subject matter that is neither disclosed nor suggested in the cited art. It is, therefore, respectfully requested that all of claims 37-60, 63-65, and 68-75 be allowed, and that this application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicant's undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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